

Oliva ispida Link, Marrat, Thes. Conch., IV, *Oliva*, 12, figs. 15, 16.

Oliva fusiformis Lam., Ann. du Mus., XVI, p. 318, 1810.

Oliva obesina Ducl., Monogr., in Comp. Rendus, II, tab. 16, figs. 9-11, 1835.

Both Bolten and Lamarck again refer to the same figure by Martini (Conch. Cab. II, tab. 51, f. 562) Lamarck's first reference is to a similar figure in the Encyl. Meth., plate 367, fig. 7. The markings are coarser than in *O. reticularis*. Specimens are frequently obsoletely banded or overlaid with brown. *O. bullata* Marr., seems to be a narrow form of this species.

Since my notes appeared in the October NAUTILUS my friend Mr. Charles Hedley, of Sydney, Australia, has written that *Oliva oliva* Linné should be used in place of *Oliva vidua* Bolton. In this I now agree although at first I thought it was difficult to decide just what form should bear Linné's name. Hanley says: "Still it is not unworthy of remark that the *Oliva nigrita* of Karsten (*O. maura* of Sowerby, Genera Shells) has been indicated as the principal variety or form in the 'Museum Ulricæ' and that all cited engravings (Argenville alone excepted) of the tenth edition of the 'Systema' wherein the species originally appeared, pertain to that shell."

Mr. Hedley also calls my attention to *Oliva annulata* Gmelin (Syst. Nat., p. 3441, 1792) which I have entirely overlooked. This replaces *O. amethystina* Bolten. Both references—Lister's Conch., tab. 717, f. 1, and Martini, Conch. Cab., II, tab. 51, f. 567, refer to the white form with a revolving ridge, "testa lævi alba dorsi annulo carinato." It seems unfortunate that this pale, abnormal form should become the typical, and the beautiful normal form the variety *amethystina*.

NOTES ON CALIFORNIA SHELLS. III.

BY WILLIAM H. DALL.

In a brief resumé of notable things observed in the collections on the California coast which I was privileged to visit last summer, it is impracticable to mention all the collections visited, notwithstanding nearly every one contained something of special interest, and the courtesy and hospitality of the collectors was unailing and

limitless. I can only faintly express once for all my feeling of appreciation to each and every one of them.

In Los Angeles and its vicinity by common consent the collection of Mr. and Mrs. T. S. Oldroyd, of Signal Hill, has no equal. For years they have been gathering the shells of the coast and sparing no pains to correctly name and attractively arrange them. They have also by exchange and otherwise gathered a fine series of exotic shells. It is hoped that this entire collection will before long find a place in the fine new fireproof building Los Angeles is erecting as a public museum. It would be a calamity if the Oldroyd shells, now in a frame building far from any means of rescue, should much longer be subjected to the risk of destruction by fire. The readers of the NAUTILUS are well aware of the large number of new species, and species new to the region which have become known through the researches of Mr. and Mrs. Oldroyd, and have been described or noticed in this journal during a long series of years.

Mr. Herbert N. Lowe, of Long Beach, has gathered an interesting collection where I noted especially large and fine specimens of the *Williamia vernalis* from San Nicolas Island, and some remarkably distorted specimens of *Neverita recluziana*.

In the collection of Mrs. Zech, of Long Beach, I noticed a specimen of *Lottia gigantia* 105 x 85 millimeters in dimensions; a fine specimen from Monterey of the rare *Ovula vidleri* Sby. (1881) and a large suite of *O. barborensis* Dall, both from Newport, Cal. In this as in most of the other local collections were remarkably large and fine *Acmæa scabra*, *persona* and *spectrum* from the new government breakwater at San Pedro, which is also the locality for remarkably clean and large *Omphalius aureotinctus* and *Calliostoma supragranosum*. A study of a very large number of the latter species indicates that *C. splendens* Cpr. may have to be reduced to varietal rank. Miss Zech has personally picked up on Vashon Island, Puget Sound, a specimen of *Chione fluctifraga*, doubtless carried there in ballast by some of the lumber vessels returning from the South.

In the collection of Mrs. Eshnaur at Terminal Island, was a specimen of the curious convex, fan-shaped variety *holzneri* Hemphill, of *Haliotis cracherodii*, from five miles south of Redondo, collected by Mr. Eshnaur. Most of the specimens so far obtained of this form are reported to have come from the Pacific coast of Lower Cali-

fornia. Also *Pinna oldroydi* from over 100 fathoms, off Newport, and *Capulus californicus* on *Pecten hastatus*, hitherto reported as commensal only with *P. diegensis*. Another ballast shell from Puget Sound was noted, in a specimen of *Oliva angulata*.

The collection of Hermann, later the Hettrick collection, formerly well-known to San Francisco collectors, and containing the largest known specimen of *Cancellaria cooperi*, is now the property of Mr. and Mrs. Golisch of Los Angeles. It offers many interesting Californian and exotic shells for study.

In Mrs. Ball's collection a fine and brightly colored series of *Angulus carpenteri* Dall (*variegatus* Cpr. not Gmelin) was especially notable, as well as many other attractive and interesting local species.

Mrs. Baldrige of Los Angeles, Mrs. Bentley and Mrs. McFarren of Venice, Dr. J. J. Rivers of Santa Monica and several other members of the flourishing Conchological Club of Los Angeles, have collections well worthy of examination. Mrs. Burton Williamson, whose contributions to the conchology of the coast are well-known, has given her collection to the new museum of Los Angeles where it will be suitably installed when the building is completed.

The San Francisco collectors were, without exception, the victims of the fire following the recent earthquake. Those of Oakland were more fortunate, and, notwithstanding the destruction caused at Stanford University by the earthquake, their collections were not seriously damaged. At Stanford is the large collection made at the Galapagos Islands by the expedition sent out by the California Academy. It was fortunate enough to arrive in San Francisco after the great disaster and when worked up by Mr. Ochsner, one of the expedition, will eventually take its place in the new Museum projected by the Academy, for which the city has offered a site in the Golden Gate Park, where the danger from fire will be almost nil.

Prof. Raymond of the University of California is working at the collection made near San Pedro, by the party directed by Prof. Ritter in 1899, which contains many interesting and novel forms. Among these was noticed a fine new species of *Calliostoma*, pure white in color. A specimen of *C. gloriosum* from Pt. San Pedro, 12 miles below the Cliff House at the entrance to San Francisco Bay, is in Prof. Raymond's collection. This, is I believe, the most northerly locality yet reported for the species.

Mr. Button's collection at Oakland is notable for its fine series of *Cypræas*, including some of the rarest Pacific coast forms of *Trivia*.

The collection of the University contains a number of Cooper's and Carpenter's types, but awaits a new building for its proper display.

THE ANATOMICAL STRUCTURE OF CERTAIN EXOTIC NAUIDES COMPARED WITH THAT OF THE NORTH AMERICAN FORMS.

BY DR. A. E. ORTMAN.

(Concluded from page 120).

In all other cases the diaphragm is complete, and extends to or close to the posterior margin of the mantle, where it separates the anal from the branchial opening. Two types are recognizable, which form as many distinct and fundamentally different groups (families). In the one (*Unionidæ* of North America and Asia) the gills alone form the diaphragm. In the other (South American and African forms, possibly to be called *Mutelidæ*) the diaphragm is formed anteriorly by the gills, but posteriorly by the union of the mantle itself.

(b) The mantle edges are originally free all around. But a tendency develops soon to form two distinct openings, the siphons. In *Margaritana* the most primitive conditions are observed, and the two openings are distinguished only by the development of the papillæ. Closely allied conditions are found in a genus of typical *Unionidæ* (*Rotundaria*). But the general tendency is, among the *Unionidæ*, not only to draw the mantle edges together by the diaphragm, thus separating anal and branchial, but also to limit the anal above by the junction of the mantle edges, which, however, leaves open above the anal a supra-anal opening, which only in rare instances becomes closed (*Lampsilis parva*). The branchial opening in the *Unionidæ* is never defined anteriorly by a growing together of the mantle margins. (In the higher forms of the *Unionidæ*, subfamily *Lampsilinæ*, special structures develop in front of the branchial opening, chiefly in the female, which serve as devices for the aeration of the marsupium during the breeding season.)

In the other family (*Mutelidæ*?) the two openings are always separated from one another by a diaphragm formed by the mantle. In some cases the mantle edges are free from the rest. In other cases